

Handouts for

Survival Skills for the Information Jungle: What all kids need to know about using the Internet.

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Survival Skills for the Information Jungle: Information Problem-Solving Activities Are More Important Than Ever	p. 2
Information jungle survival skill 1: Know where you are going and make sure the trip's worthwhile.	p. 4
Information jungle survival skill 2: Learn to stay on the main trail to avoid the quicksand of irrelevant information.	p. 6
Information jungle survival skill 3: Learn to tell the good berries from the bad berries.	p. 7
Information jungle survival skill 4: Don't just gather sticks. Make something with them.	p. 9
Information jungle survival skill 5: Learn to play the jungle drums (and remember, others are listening)	p. 10
Information jungle survival skill 6: Prepare for the next journey by learning from the last.	p. 11
California's Velcro Crop Under Challenge	p. 13
Self-Evaluation Rubrics for Teacher Internet Use (2002)	p. 15
Computer Skills for Information Problem-Solving	p. 17
<i>Other related articles I have written can be accessed from my homepage at: <www.doug-johnson.com></i>	

Survival Skills for the Information Jungle: What Kids Need to Know About Using the Internet

Jungles can be confusing and even dangerous to the inexperienced traveler. The sheer abundance of resources and multitude of paths in them demand the explorer have special skills if they are going to survive and thrive. This presentation describes six Information Jungle Survival Tips for students and explores how they can be taught.

SpooF sites: (links checked Oct 2007)

California's Velcro Crop Under Challenge

<http://home.inreach.com/kumbach/velcro.html>

Feline Reactions to Bearded Men

<http://www.improb.com/airchives/classical/cat/cat.html>

Mankato MN Homepage

<http://city-mankato.us>

Dihydrogen Monoxide

<http://www.dhmo.org/>

Clones-R-Us

<http://www.d-b.net/dti/>

Northwest Tree Octopus

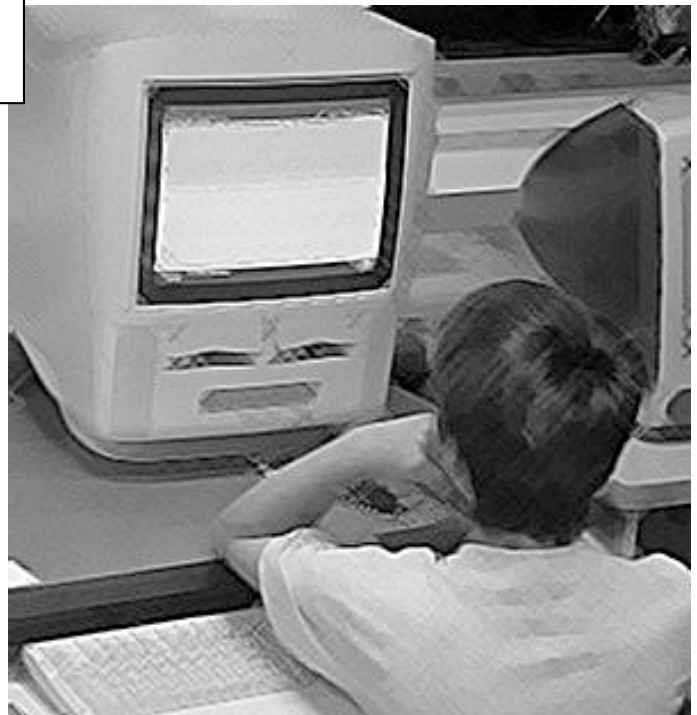
<http://www.zapatopi.net/treeoctopus/>

First Male Pregnancy

<http://www.malepregnancy.com/>

National Motor Vehicle License Bureau

<http://www.license.shorturl.com/>



Survival Skills for the Information Jungle: Information Problem-Solving Activities Are More Important Than Ever

The Information Jungle

Research for most of us who finished our formal education prior to 1995 operated in an Information Desert. Those five or ten sources required for a research paper were tough to find in our school and public libraries. The final product of our information quest was usually a written compilation of information, often verging on plagiarism to fulfill an assignment that neither requested nor encouraged the creation of new knowledge or innovative solutions to real problems.

Today's student who has access to online sources of information operates in an Information Jungle. A quick search using an Internet search engine can yield thousands of possible sources of information. Savvy teachers today are asking students not just find and organize information, but to do so to answer genuine questions, offer original solutions to problems, and communicate their findings using a variety of media.

While technology can be enriching, the Information Jungle and projects that call for the demonstration of higher level thinking skills contain perils as well. The role of the teacher and library media specialist has rapidly changed from one of a desert guide (helping learners locate scarce resources) to one of jungle guide (helping learners evaluate and select resources of value). This change has been so rapid that many educators have not had time to learn the skills necessary for their new roles. But for those who do, the rewards for doing information problem solving in the Information Jungle can be tremendous.

Good information problem solving activities and projects help educators answer some loudly voiced critical questions:

- Is technology being used in meaningful ways in schools?
- How can we keep curriculum from becoming "a mile wide and an inch deep?"
- Are schools preparing students to work in an information-based economy?

Uses of Technology in Schools

Teachers have been puttering with technology in schools for over two decades now and don't have much evidence to show that its use has made much difference in student achievement. The use of programmed learning, drill and practice software, and computer simulations, while mainstays in many labs, have not resulted in gains in student test scores and rarely even attempt to engage students in more than low level thinking skills.

One application of technology does live up to the exciting promises made by the technophiles: using networked computers with access to a wide-range of online information as tools to support problem-based learning activities that help teach information literacy skills. Information found, conclusions drawn, and action requested as a result of these activities can then be analyzed and shared with business productivity tools like word processors, desktop publishing software, presentation programs, spreadsheets, databases and video-editing software.

How has "research" changed since you were in school? Jot down some skills students today need that we did not.

Problem-based learning and information literacy

Problem-based learning is a constructivist approach to helping students learn essential skills through the actual application of those skills in answering questions or solving a problem. In traditional methods of instruction, the teacher poses a question and provides an answer to the question, either directly or by directing the learner to a specific source for the answer. (for example “Read Chapter 24 and answer the questions at the end of it.”) Using a problem-based approach to instruction, the teacher helps students answer genuine question of personal relevance related to the topic.

For students to be successful problem solvers, teachers need to teach what are commonly called information literacy skills. These skills usually include having the ability to:

1. Articulate the problem and identify the information needed to answer it.
2. Know information sources and locate relevant information.
3. Select and evaluate the information in those sources.
4. Organize, synthesize, and draw supported conclusions from the information.
5. Communicate findings and conclusions to others.
6. Evaluate the product and process.

While many states and a variety of individuals have developed information problem-solving models, The Big6™ Information Problem-Solving Approach is one of the most popular in current use by teachers and librarians. Details and support materials related to this model can be found at <http://big6.com/>. While often information problem-solving skills are taught as part of an extended “research” project, many teachers are also finding ways for students to practice a subset of those skills on a daily basis. (See ‘Everyday practice in problem-solving on the next page.)

Information-problem solving meets technology

Most information problem-solving models were developed in the days of the Information Desert. Teaching students information skills dealt primarily with helping them locate books and magazine articles, compile and organize information from them, and write a properly cited “research paper” about a topic selected from a narrow list on which the teacher and librarian knew information could be found.

Why use problem-based learning?

One of my favorite units I taught as an elementary librarian was on H.W. Wilson’s *Readers Guide to Periodical Literature*. This useful guide was so complex that the company sold a complete package of materials designed to help students master its use: worksheets, overhead transparencies, and even a test about the material.

I used these materials to great effect. My students demonstrated that they could find magazine articles on a particular topic, identify the name and date of the magazine in which an article appeared, determine the author’s name, and tell if the article included illustrations or graphs. I knew this because all my kids scored very, very well on the test that came with the teaching packet.

Only one question seemed to stump the majority of the 5th graders to whom I taught this unit. As I remember, it read, “Under what circumstances would you use the Readers Guide to Periodical Literature?” But hey, they passed the test with flying colors, and I considered myself a pretty darned good teacher.

How do you as an adult learn a new skill and demonstrate how well you learned it?

Happily many teachers and media specialists have found that information technologies compliment and enrich information problem-solving opportunities. Students are freed from restricting their questioning to only topics on which the local library has materials. Students are freed from communicating their findings only through written reports. The Internet and other online resources such as full-text periodical databases, electronic encyclopedias, and CD-ROM content specific databases help make finding information on any topic of individual interest possible. Easy-to-use software like graphics, desktop publishing, mind-mapping, database, spreadsheet and webpage creation programs allow students to tell others what they have found though graphics and sound as well as verbally. Video cameras, digital editors, community access channels and school websites give students the opportunity to record and share their findings with an audience outside the school. Exciting opportunities for involving students abound in the Information Jungle.

Information jungle survival tips

Most jungles, however, can be confusing and even dangerous to the inexperienced traveler. The sheer abundance of resources and multitude of paths to them demand the explorer have special skills if the resources are to be used in constructive ways. Find below six Information Jungle Survival Tips for teachers and students.

Information jungle survival skill 1: Know where you are going and make sure the trip's worthwhile.

How do your research questions stack up? Helping students prepare good questions to answer or problems to solve using information is more important than ever for a number of reasons:

1. The vast amount of information available makes research that tries to be exhaustive impossible for nearly every topic. Even in the Information Desert days students would often take a subject like World War II as their research topic. I would then show them the volumes already written on the subject and ask if they really wanted to rewrite all of that information. A clever way of helping students narrow the focus of their research is by helping them find a question, preferably of personal interest, about the broader topic. For the student who wants World War II as a topic, the teacher or librarian might ask, "What other interests do you have?" A student who expresses an interest in horses might then try to answer the question. "Did horses play a part in the battles of World War II?"

2. Plagiarism can only be avoided by having the learner ask genuine questions that require original higher-level thinking. Plagiarism has come of age on the Internet. Now when Mr. Foggy assigns a paper on the Olympics of Ancient Greece, the savvy student heads for a site like <www.schoolsucks.com> where a variety of papers are available for downloading on that topic. The copy, paste, find, and replace commands used with an electronic encyclopedia and word processing program make quick work of a topic that does not ask for any original thought on the part of the writer. However change Mr. Foggy's assignment to read, "How would your favorite athlete of today have done in the Olympics of Ancient Greece?" The student now not only needs factual information but must apply the higher level thinking skills of analysis, synthesis and evaluation – and those cannot be downloaded.

3. In order for all students to master information literacy skills, the problem or question must be of interest to the individual. Teachers who recognize the core knowledge to be gained through a problem-solving process understand that students can still make topic choices. If the purpose of an activity is to help students understand how the geography of a state affects its economy, it shouldn't make much difference to the teacher if the student looks at Florida, Nebraska, or Oregon. But it may make a big difference to the student who has a favorite state. Personal choice leads to intrinsic motivation.

Everyday practice in problem-solving

We too often think of information problem-solving in the context of huge projects or term papers, when most of us use information problem-solving skills everyday. How can we give our student's everyday practice in using the Internet? Some suggestions are below. Add your own!

1. Use the Internet to check the weather forecast and make a recommendation about dress for the next day.
2. Search and report an interesting fact about the author of the next story being read by the class.
3. Email students in another class to ask their opinions on a discussion topic.
4. Recommend a movie or television show to watch the coming weekend.
5. Find two science articles that relate to the current science unit. Evaluate the credibility of the sources of information.
6. Locate a place from a current news headline on an online map resource like <www.mapquest.com>.
7. Recommend a book to a classmate based on other books that classmate has read using the school's library catalog or an Internet source.
8. Update the class webpage with interesting facts from units studied and links to related information on the web.
9. Estimate the number of calories and fat grams in the meal served in the cafeteria that day.
10. Find a "quote of the day" on a specific topic and use a graphics program to illustrate and print it out.

Your ideas!

"Brain research shows that permanent learning only takes place when research activities are assigned **frequently enough** that students can exercise and develop the essential skills of critical reading, writing, higher-order thinking, and presenting ideas and opinions with a purpose.

Brain research also shows that these activities must be related to **student interests about their world** and provide the opportunity for them to develop their own "reasoned opinions" based on researched facts and expert opinions. This desired learning is impossible to do for **all students** when schools depend on the "term paper" as their only research strategy.

A recent study of Social Studies teachers indicates that the **age of the term paper is rapidly disappearing** and being replaced by shorter and more frequent types of mini-research. Education Week – November 20, 2002." – Carl Janetka
<carl_janetka@bigchalk.com>

A rubric for the quality of a good information problem-solving project:

- Level One: My research is about a broad topic. I can complete the assignment by using a general reference source such as an encyclopedia. I have no personal questions about the topic.
Primary example: My research is about an animal.
Secondary example: My research is about the economy of a state.
- Level Two: My research answers a question that helps me narrow the focus of my search. This question may mean that I need to go to various sources to gather enough information to get a reliable answer. The conclusion of the research will ask me to give a supported answer to the question.
Primary example: What methods has my animal developed to help it survive?
Secondary example: What role has manufacturing played in an assigned state's economic development?
- Level Three: My research answers a question of personal relevance. To answer this question I may need to consult not just secondary sources such as magazines, newspapers, books or the Internet, but use primary sources of information such as original surveys, interviews, or source documents.
Primary example: What animal would be best for my family to adopt as a pet?
Secondary example: How can one best prepare for a career in manufacturing in my area?
- Level Four: My research answers a personal question about the topic, and contains information that may be of use to decision-makers as they make policy or distribute funds. The result of my research is a well supported conclusion that contains a call for action on the part of an organization or government body. There will be a plan to distribute this information.
Primary example: How can our school help stop the growth in unwanted and abandoned animals in our community?
Secondary example: How might high schools change their curricula to meet the needs of students wanting a career in manufacturing in my state?

What might a Level Three or Level Four project about these topics look like?

States

Diseases

Current event

Explorers

Presidents

Careers

The Constitution

Nutrition

Simple machines

Authors

Information jungle survival skill 2: Learn to stay on the main trail to avoid the quicksand of irrelevant information.

Searching for information on the Internet is a pretty simple affair. Find a search engine like Google or Excite or Lycos, type a term in the search box, and find hundreds, if not thousands, of possible sources. Students need three different skills to help them improve the results of such searches:

1. *Start with the best search engine:* Google <www.google.com> sorts results by interpreting the number of links to a page as an indicator of that page's value. It seems to work. Ask Jeeves <www.askjeeves.com> allows users to ask natural language questions. Students and adults should get to know one or two search engines well.
2. Use advanced search operators in constructing a search. The more descriptive the term searched, the better the results. A search on "twins" will provide links to both siblings and the baseball team. Using the Boolean operator NOT (twins not baseball), will cut down on the number of hits returned. Teach the use of quotation marks to create a combined term ("baseball bats" rather than searching for "baseball" and "bats.")
3. Discriminate relevant hits from irrelevant. A child using a search engine to find information about "cougars" is as likely to find pages on sports teams and automobiles as big cats. Most search engines return some descriptors that indicate the general topic of the page. Students need to read these and determine those relevant to their needs. This is especially true in districts without Internet filters when students search on topics that might have sexual connotations.

By the way, another overlooked "skill" that needs to be reinforced is that the Internet is not always the best place to look for information. A 45 minute Internet search for the population of Bolivia can be done instead with a 3 minute search in library's current World Almanac.

Information jungle quick hints:

Learn how to interpret a "404" error – file not found.

1. Is the URL entered EXACTLY right (no 1's for l's, no O's for 0's, every period in its place.)
2. Did you copy the WHOLE URL? (Some times in emails the line breaks and the URL is in two lines.)
3. Can you work backward to find the problem, eliminating characters after each / until a page can be displayed.
4. Is the address "case sensitive?"
5. Try .htm instead of .html at the end of the URL (or vice versa).
6. Know when a page is "blocked" by a filter.

Can you find Mankato's Information Literacy Curriculum when give the WRONG Web address below?

<http://www.isd77.k12.mn.us/resources/infocurr/inflit.htm>

List YOUR survival hints:

How much should we rely on the "free Internet?"

Some library media specialists (and lots of vendors) would argue that students should primarily be using subscription online services (eLibrary, Gale, Ebsco, World Book Online, etc.). What are the advantages and disadvantages of such services compared to the "free" Internet?

Should we be pre-selecting Internet sites for students to use or teaching them how to search for themselves? Is there a value to using webquests?

Information jungle survival skill 3: Learn to tell the good berries from the bad berries.

Joey Rogers, Executive Director of the Urban Library Council, observes that libraries should have two large signs in them. The first hanging over the stacks that reads “Carefully selected by trained professionals” and the other hanging over the Internet terminals that reads “Whatever.”

Even very young students can and should be learning to tell the bad information berries from the good ones. Since junior high students often make websites that often *look* better than those of college professors, we teach students to look:

- For the same information from multiple sources.
- At the age of the page.
- At the credentials of the author.
- For unstated bias by the page author or sponsor.

Kathy Schrock has a wonderful, comprehensive webpage on website evaluation at <<http://schrockguide.org/abceval/>>

As students use research to solve problems about controversial social and ethical issues, the ability to evaluate and defend one’s choice of information source becomes very important.

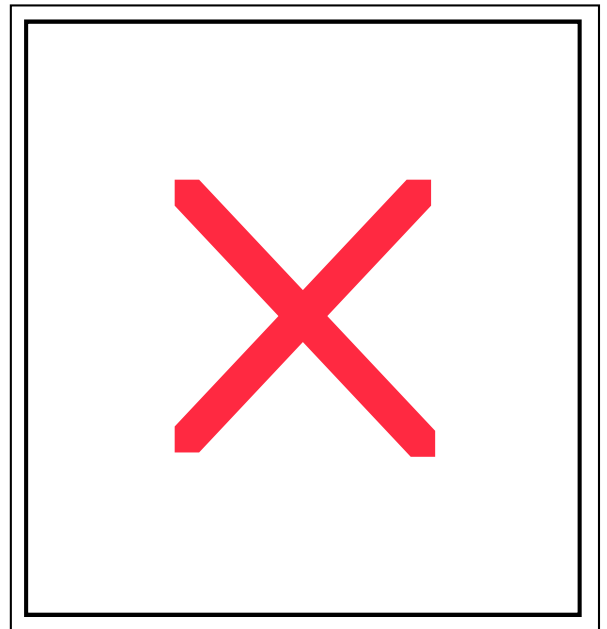
A Political Range of Sources

Your students have been researching current diseases and they come into the classroom with information from these sources. Could you help them determine which could be considered the most reliable? Might you as a teacher have a different opinion than some parents about the validity of information from some sources?

Rate these sources for reliability:

- Center for Disease Control
- *Newsweek*
- The bestseller *The Hot Zone*
- Flyers from an insurance company or HMO
- Personal webpage
- Chat room conversation
- Rush Limbaugh’s radio talk show
- National Public Radio’s *Science Friday*

<http://www.radcab.com/>



Evaluation Criteria Rating System for Web Sites

From ICONnect's Evaluation Criteria Rating System for Web Sites

Name of Site: _____

URL: _____

Curricular Use(s) of Site: _____

Suggested grade levels: _____

Authority/Credibility

- Who owns the web site and why?
- Is the author's name and email address included?
- Is the web site affiliated with any major institutions or organization?
- What is the expertise of the individual or group that created the site?
- Does the author's/group's affiliation appear to bias the information?
- Is the purpose of the web site stated?
- Is personal information requested from the user?

_____ Rating for this section (10 points possible)

Content

- Does the web site contain accurate, reliable information?
- When was it last updated?
- Is the content meaningful and useful?
- Does it contain original content?
- Is any sort of bias evident?
- Does the content appear to be fact or opinion?
- Does the information appear to be accurate?
- Does it contain primary source material?
- Are the links up to date?
- Are the links annotated? evaluated?
- Do multimedia elements help you to understand the content better?
- Are the grammar and spelling correct?

_____ Rating for this section (30 points possible)

Design and Technical Features

- Is the web site well designed and operated efficiently?
- Are the pages uncluttered with useful headings and subheadings?
- Do the icons clearly represent what is intended?
- Can you use a text-based browser?
- Is the web site accessible at most times of day?
- Is the design consistent through out the site?
- Does it load in a reasonable amount of time?
- Are there clear directions for locating and installing helper applications?
- Can you print the contents of the page?

_____ Rating for this section (10 points possible)

Navigation

- Can you move around the web site easily?
- Do external and internal links work?
- Are the links clearly and accurately described?
- Can you easily return to the home page from supporting pages?
- Is there a searchable index, a site locator map or help screens?
- Are the navigation icons consistent throughout the site?

_____ Rating for this section (10 points possible)

Curriculum Connections

- Does the site support or enhance the curriculum?
- Does the content correlate to the curriculum?
- Does it support national content and performance standards?
- Is the content unique and not available elsewhere?
- Does the site offer instructional support materials?
- Are the program objectives clearly stated?

_____ Rating for this section (20 points possible)

Learning Environment

- Is the site designed to take advantage of the unique capabilities of the Web? (information access, up-to-date information, publishing and communication)
- Does the site provide ways for learners to share and display their work?
- Does the site invite student input or data collection?
- Does the web site offer interactive opportunities?
- Are student contributions and communications screened prior to posting?
- Does the site offer access to information usually not available in school libraries?
- Does the site offer access to current, up-to-the-date information?
- Does the site encourage students to collaborate or communicate with other students or experts?

_____ Rating for this section (20 points possible)

_____ **TOTAL NUMBER OF POINTS**

SITE RATINGS

81–100 points Super Cyber Resource

61–80 points High Net Appeal

41–60 points Bumpy Surfing

0–40 points Cyber Trash

Information jungle survival skill 4: Don't just gather sticks. Make something with them.

Traditional research assignments asked students to gather factual information and present it in an organized fashion. But if problem-solving activities are to help students master critical thinking skills, they must also require that learners:

- Organize information to help determine importance and spot trends
- Determine the importance of discrete pieces of data
- Anticipate critics of the findings or solutions and be able to defend one's choices
- Offer conclusions and solutions that show insight and creativity
- Advocate an action or actions that can be taken by the audience of the research findings

This is how information problem skills will be used throughout students' lives. Whether using information to select a community in which to live, political candidate for whom to vote, or camera to purchase, we gather sticks of information for the purpose of determining a course of action.

John Lubbock, a 19th century astronomer, once wrote:

*There are three great questions which in life we have to ask over and over again to answer:
 Is it right or wrong?
 Is it true or false?
 Is it beautiful or ugly?
 Our education ought to help us to answer these questions.*

I think of those words often when I hear educators worry about kids being more adept and comfortable with technology than those of us who were growing up when the earth was still cooling.

What I hope we don't forget is that the same great issues of education that Lubbock identifies are still with us today and are perhaps more important than ever. When our students download music, we need to be there to ask if there is a copyright question involved (right or wrong). When they find sources of information on the Internet, we need to be there to ask them if the information is credible (true or false). When they put graphics into their presentations, we need to be there to ask them if those visuals contribute to the message they are trying to get across (beautiful or ugly). I like to think the questions we can help answer are more important in the long run than "How do you create a new background on a slide?"

We need to help make sure our students not only know how to use these new electronic marvels, but use them well. A short list of tools is below with some of the sensibilities about their use with which we geezers can still help:

Some technologies	Some things with which old people can still help
Spreadsheets	Math sense, numeracy, efficiency in design
Charting and graphing software	Selecting the right graph for the right purpose
Database design	End user consideration, making valid data-driven decisions
Word processing	The writing process, organization, editing, grammar, style
Presentation software	Speaking skills, graphic design, organization, clarity
Web-page design	Design, writing skills, ethical information distribution
Online research	Citation of sources, designing good questions, checking validity of data, understanding biases
Video-editing	Storyboarding, copyright issues when using film clips and audio
Chat room use/Instant messaging	Safety, courtesy, time management

So just how do we “teach” these true thinking skills?

No matter how sophisticated the N-Geners are technologically, in matters of ethics, aesthetics, veracity, and other important judgments, they are, after all, still green. By virtue of our training and life experiences, we can apply the standards of older technologies (the pencil, the podium, the book) to those which are now technology enhanced. And we'd better. Given the choice of having Socrates or Bill Gates as a teacher, I know whom I would choose.

Information jungle survival skill 5: Learn to play the jungle drums (and remember, others are listening)

One of technology’s very best attributes is how much it can help us improve the communication process. Most technology curricula include how to use a word processor, desktop publishing software, spreadsheets, databases, presentation programs and video cameras. Increasingly, students are learning how to create webpages and do digital editing. Learning such technologies simply for the sake of learning them leads to what consultant Jamison McKenzie <www.fno.org> calls “PowerPointlessness.” Glitzy webpages, noisy hypermedia presentations or colorful brochures that are very short on content are too often the result of “computer classes” that disregard content area learning.

Using technology to communicate the findings of a problem-based activity keeps this from happening. The emphasis is not on the use of the technology, but the effectiveness of the information problem-solving process that includes communicating one’s findings.

Technology has also made it possible for students to have a much wider audience looking at and reacting to the results of their projects. For example, findings reported on webpages can be shared with students around the world as well as with family and community members. Broad audiences create students who are more conscientious about their work.

In practice:

Beth’s class has chosen an interesting way to study World War II. Instead of reading from a textbook, Beth has asked for volunteers from the community to come in and be interviewed by teams of her eight grade students about what impact the war had on them, either as military personnel or as civilians.

After careful interviews, the students wrote a narrative, took digital photographs, and scanned memorabilia from the time. They looked for web-based references to the topics and terms they heard about. And finally, they used all this information to create web pages that allowed them to share what they learned about their neighbors.

<www.isd77.k12.mn.us/schools/dakota/worldwarII/worldwarIIinterviews.htm>Both students and teachers worked “overtime” to interview, write, clarify, re-write and design these pages.

At an open house, the interviewees and their families were invited in to view and comment on their web pages. Over 11,000 visitors have read these pages, including many distant family members of those interviewed.

Technology skills

Communication skills

Interpersonal skills

Other benefits:



Information jungle survival skill 6: Prepare for the next journey by learning from the last.

Information problem-solving skills are sufficiently complex that complete mastery of them is probably not possible. Assessment tools that help students continue to improve their information searching, evaluating and communicating skills are necessary rather than simple evaluative tools. Checklists and rubrics that describe specific criteria for both content and technology mastery give students direction for continued improvement.

A problem-solving project assessment tool practice – be thinking “What would you add as quality criteria?”

Small study groups have been asked to select an event in early American history of interest to them and prepare a multimedia presentation to share with the rest of the class. The teacher, classmates, and each team member will evaluate the presentation using this guide:

Your Multimedia Presentation Should Include the Following

Content:

- 1. In large bold print, title your presentation with both the location and the years. Also, provide clues that locate your picture in time. For example show:
 - a) proper clothing
 - b) correct transportation
 - c) tools and weapons
 - d) people doing their daily work
- 2. Create or import pictures of the key events. What happened in your area that was so important
- 3. Include pictures of the main geographical features.
 - a) rivers, oceans, lakes
 - b) forests, deserts
 - c) mountains, canyons
- 4. Include symbols that were important to the people in your region.
 - a) religious symbols
 - b) job-related symbols
 - c) celebration or holiday symbols
- 5. Include important or famous people.
- 6. Include important or famous sayings or documents.
- 7. Include the sources of all information given including pictures.

Format:

- 8. A minimum of eight cards, each with a uniform background and layout style.
- 9. Easily seen and understood navigation buttons.
- 10. A logical organization for the stack.
- 11. Readable text.
- 12. Clear graphics.
- 13. Sounds and movies that add to the understanding of the topic.

Check off each box as you complete the items listed. Ask a parent or other adult to also complete the checklist. After you have finished your stack, indicate your region and sign your names below.

Region or Colony _____

(student)

(student)

The hazards are great, but so are the rewards

Teachers who help students formulate and answer meaningful questions and solve real problems take chances. Critical thinking often leads to messy solutions, information literacy activities are tough to time, and higher-level thinking by students often leads to genuine intellectual challenge for the teacher. To be successful, teachers may need to collaborate with technologists, library media specialists, and assessment experts in order to design effective projects. And the results of such projects can be both spectacularly good and spectacularly bad.

But these teachers have the satisfaction of knowing that their students are using technology as a real world application; that basic skills are being reinforced through their application, that they are providing meaningful, motivational experiences for their students. And as one media specialist puts it, "The activities that require originality and creativity and the use of technology in order to solve a problem are just plain fun for both students and teachers." Getting students excited about learning powerful skills is the best reason of all for trekking in the Information Jungle.

Integrating computer skills with research skills

Eisenberg and Johnson in "Computer Skills for Information Problem-Solving: Learning and Teaching Technology in Context" align specific technology skills to specific steps in the Big6™ information problem-solving model.

Jukes, Dosaj and Macdonald in *Net.Savvy II: Building Information Literacy in the Classroom*

<www.thecommittedsardine.net/infosavvy/books/netsav2.html> offer a technology-centered, but practical approach to using technology to help students make meaning of information.

Valenza, Joyce *Super Searchers Go To School : Sharing Online Strategies with K-12 Students, Teachers, and Librarians (Super Searchers series)* Cyberage Books/Information Today

California's Velcro Crop under Challenge (1993)

by Ken Umbach

California's important Velcro crop, vital to the clothing, footwear, and sporting goods industries, has been severely stressed by drought, disease, and pests.

Background

Velcro®, an engineered crop, consists of two distinct strains: hooks and loops. As any user of Velcro knows, a strip of hooks clings to a strip of loops as the springy hook-shaped fibers latch through tiny but firm loops. Gentle pressure allows the hook strip to be pulled from the loop strip. The user may repeat the process time and again, making this product a convenient, versatile replacement for zippers, buttons, snaps, laces, and other forms of fastener in wide-ranging applications.

California's climate and soil conditions make the state an ideal venue for and successful producer of both strains of Velcro. For obvious reasons, of course, the hook strain must be grown in fields separated from those with the loop strain. This is often accommodated by widely spacing separate fields of the two strains among large expanses of cotton, alfalfa, or other crops.

For competitive and industrial confidentiality reasons, of course, the crop is not widely highlighted in crop reports. A little Velcro goes a long way, as both strains are densely packed on their respective mature plants, and the entire crop is dwarfed by other field crops, most notably cotton. Nonetheless, the crop is of high value and can be a substantial profit builder for the successful grower.

The Issues

Three issues have conspired to threaten and diminish the crop in California's southern San Joaquin Valley, especially drought-affected Kern County.

- Dry and windy conditions have caused hook and loop spores to commingle even across widely spaced fields, resulting in tangled Velcro bolls combining both strains and unprocessable by any known means.
- Invasions of disease and pests have damaged the crop. Specifically (1) the flaccidity virus has resulted in weakened hooks, unable to hold adequately or even to snap through the corresponding loops, and (2) the pest *millipedus minisculus*, or 'tiny thousand-footed creature', has multiplied in the Velcro fields, frequently becoming so ensnared in the developing loops as to make the crop unharvestable.
- Drought has both limited water for the westside Velcro fields and exacerbated crop-stunting salinity.

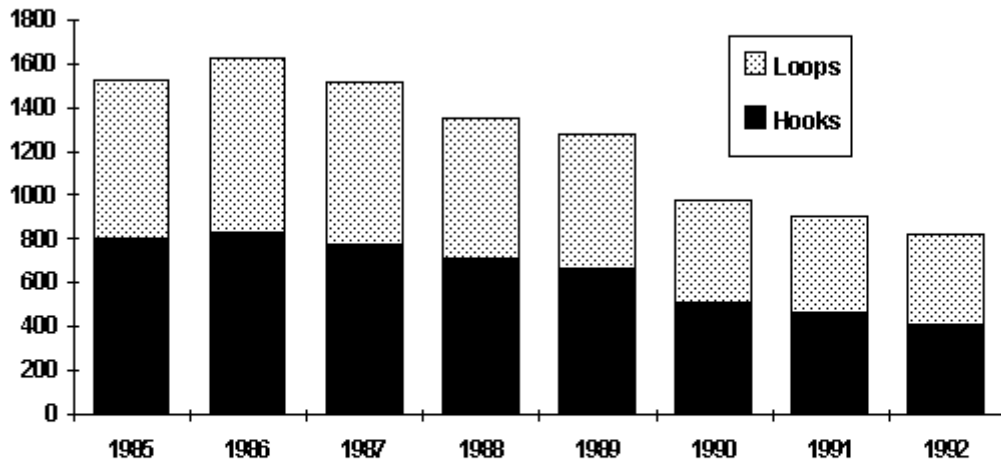
Crop management for Velcro is made especially difficult by the need to outfit field workers head-to-toe in Teflon® jumpsuits. (The Teflon crop is another issue, to be tackled in a future report in this series.) Absent such protection, field workers are in danger of becoming enmeshed in the Velcro bolls while working the fields. Clothing and even body hair may become entangled with the hooks or loops, requiring difficult extraction procedures. The Teflon jumpsuits in turn require personal cooling equipment and expensive maintenance. When available, it is preferable to hire a crew composed entirely of professional body builders, who are both strong and hairless from head to toe.

All in all, cultivation is a demanding and costly process, making profit margins unusually vulnerable to price swings and crop productivity losses.

Status

As the chart and table below so starkly show, the combined assaults on the Velcro crop have had marked effects.

**California Velcro Crop Acreage (Successful Harvest)
in Decline, 1985-1992**



California Velcro Crop Acreage (Successful Harvest)

	1985	1986	1987	1988	1989	1990	1991	1992
Hooks	795	824	786	700	655	500	455	400
Loops	734	802	750	650	625	480	450	425

Recommendations

In view of the singular nature of this specialized crop and its high contribution, when successful, to the financial well-being of the farmers who have the tenacity to grow it:

- The respective agricultural commissioners and extension personnel should emphasize proper spacing requirements for fields of the hook and loop strains. Research, training, and inspection are all necessary.
- Responsible officials should redouble efforts to eradicate flaccidity virus and *millipedus minisculus*.
- Water officials should accommodate the special needs of this high value crop in determining allocations, especially in years of water shortage.

By these means, it should be possible to restore the vigor, productivity, and profitability of this specialized but significant crop.

Postscript (December 1996). The return of relatively normal rainfall patterns, together with sunspot conditions that have decimated flaccidity virus and millipedus minisculus, have contributed to a strengthened Velcro crop, but no one knows what the future might bring. Consider investing in zippers and buttons.

<http://members.unlimited.net/~kumbach/velcro.html>
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Self-Evaluation Rubrics for Teacher Internet Use (2002)

I. Internet basics and history

- Level 1 I do not understand how networks work, nor can I identify any personal or professional uses for networks, including the Internet. I do not have an account on any network nor would I know how to get one.
- Level 2 I can identify some personal or professional uses for networks, and understand they may have a value to my students and to me. I've read some articles about the Internet in the popular press. I can directly use network access to a library catalog or CD-ROM.
- Level 3 I can describe what a computer network does and how it can be useful personally and professionally. I can distinguish between a local area network, a wide area network, and the Internet and can describe educational uses for each. I can describe the history of the Internet, recognize its international character, and know to a degree the extent of its resources. I know the purpose and historical significance of newsgroups, gophers, and telnet. I have personal access to the Internet that allows me to receive and send email, download files, and access the World Wide Web. I know that I must protect my password, and should restrict access by others to my account
- Level 4 I use networks on a daily basis to access and communicate information. I can serve as an active participant in a school or organizational planning group, giving advice and providing information about networks. I can recommend several ways of obtaining Internet access to others.

II. Email and electronic mailing lists

- Level 1 I do not use email.
- Level 2 I understand the concept of email and can explain some administrative and educational uses for it.
- Level 3 I use email regularly and can:
- read and delete messages
 - send, forward and reply to messages to
 - create nicknames, mailing lists, and a signature file
 - send and receive attachments
 - use electronic mailing lists and understand the professional uses of them
 - read and contribute to a professional electronic mailing list
- Level 4 I can send group mailings and feel confident that I could administer an electronic mailing list. I use activities that require email in my teaching. I can locate lists of subject oriented mailing lists.

III. The World Wide Web

- Level 1 I do not use the World Wide Web.
- Level 2 I am aware that the World Wide Web is a means of sharing information on the Internet. I can browse the Web for recreational purposes.
- Level 3 I can use a Web browser like Explorer or Netscape to find information on the World Wide Web, and can list some of the Web's unique features. I can explain the terms: hypertext, URL, http, and html. I can write URLs to share information locations with others. I can use Web search engines to locate subject specific information and can create bookmarks to Web sites of educational value.
- Level 4 I can configure my web browser with a variety of helper applications. I understand what "cookies" do and whether to keep them enabled. I can speak to the security issues of on-line commerce and data privacy.

IV. Search tools and evaluation strategies

- Level 1 I cannot locate any information on the Internet.
- Level 2 I can occasionally locate useful information on the Internet by browsing or through remembered sources.
- Level 3 I can conduct an efficient search of Internet resources using directories like Yahoo or search engines like Google, Lycos, or Infoseek. I can use advanced search commands to specify and limited the number of hits I get. I can state some guidelines for evaluating the relevance of sited and the quality of the information I find on the Internet. I can write a bibliographic citation for information found.
- Level 4 I can identify some specialized search tools for finding software and email addresses. I can speculate on future developments in on-line information searching including know-bots and other kinds of intelligent search agents.

V. Newsgroups and electronic mailing lists

- Level 1 I have no knowledge of newsgroups or electronic mailing list functions.
- Level 2 I know that there are resources in a variety of formats available on the Internet, but cannot confidently access them.
- Level 3 I read the newsgroups that interest me on a regular basis, and I can contribute to newsgroups. I can subscribe, unsubscribe and contribute to electronic mailing lists (listservs) related to my educational field.
- Level 4 I know how to find, configure, and use the specialized tools for newsgroups and mailing lists. I can access and search mailing list archives. I use the resources found in these areas with my students.

VI. Obtaining, decompressing, viewing and using files

Level 1 I cannot retrieve files from remote computers.

Level 2 I know that documents and computer programs that are useful to my students and me are stored on computers throughout the world. I cannot retrieve these files. I can open a .pdf file with a browser plug in.

Level 3 I understand the concept and netiquette of “anonymous FTP” sites. I can transfer files and programs from remote locations to my computer, and can use programs or plug-ins that help me do this. I can extract compressed files, and know some utilities that help me view graphics and play sounds and movies. I understand the nature and danger of computer viruses, and know how to minimize my risk of contracting a computer virus.

Level 4 I use information I have retrieved as a resource for and with my students. I understand the concept of a network server, and the functions it can serve in an organization. I can use an ftp client to upload files to a server. I can create a .pdf document.

VII. Real-time, streaming and push technologies

Level 1 I use only static documents and files I retrieve from the Internet.

Level 2 I have some information sent to me on a regular basis through e-mail and I check some sites on a regular basis for information.

Level 3 I use chat-rooms, instant messaging, and customized news and information feeds. I can listen to audio streamed from the web. I know the hardware and software requirements for web-based videoconferencing. I can install the plug-ins necessary to hear and view multimedia resources.

Level 4 I can use real-time applications to design a “virtual” classroom or interactive learning experience. My students use videoconferencing for communication with experts and project collaboration with other students.

VIII. Webpage construction

Level 1 I cannot create a page which can be viewed with a web browser.

Level 2 I can save text I've created as an html file with a command in my word processor. I know a few, simple html commands.

Level 3 Using hand-coded html or a web page authoring tool, I can:

- view web pages as a source documents
- create a formatted web page that uses background color, font styles and alignment, graphics, and tables
- include links to other parts of my document or other Internet sites in my page
- know basic guidelines for good web page construction and the district's web policies

Level 4 I can use the web as an interface to databases. When appropriate, I can register my pages with search engine sites. I can help write web creation policies for design, content, and use.

IX. Learning opportunities using the Internet

Level 1 I am not aware of any ways the Internet can be used with students in my classroom.

Level 2 I occasionally allow my students to use the Internet to find information.

Level 3 I know a variety of projects and activities that effectively use the Internet to instruct and involve students. I know a source for collaborative projects, can direct students to on-line tutorials and learning resources, and encourage a variety of key-pal activities.

Level 4 I can design and implement an Internet project or maintain an educational Internet site.

X. Netiquette, On-line Ethics, and Current Issues Surrounding Internet Use in K-12 Schools

Level 1 I am not aware of any ethics or proprieties regarding the Internet nor am I unaware of any issues dealing with Internet use in a school setting.

Level 2 I understand a few rules that my students and I should follow when using the Internet. I understand that the Internet is sometimes a controversial resource which many educators and parents do not understand.

Level 3 I have read a guideline for Internet use such as Rinaldi's “The Net: User Guidelines and Netiquette” or other source, and follow the rules outlined. I know and read the FAQ files associated with sources on the Internet. I am aware that electronic communication is a new communications medium that may require new sensitivities. I can list some of the critical components of a good Acceptable Use Policy and know and use our district's. I can identify print and on-line resources that speak to current Internet issues like:

- censorship/site blocking software
- copyright
- legal and illegal uses
- data privacy
- security

Level 4 I can use my knowledge of the Internet to write good school policies and activities that help students develop good judgment and good information skills.

Computer Skills for Information Problem-Solving: A Curriculum Based on the Big Six Skills Approach

copyright Michael B. Eisenberg, Doug Johnson & Robert E. Berkowitz

March 2002

1. Task Definition:

The first step in the information problem-solving process is to recognize that an information need exists, to define the problem, and to identify the types and amount of information needed. In terms of technology, students will be able to:

- A. Use e-mail, real-time communications (e.g., listservs, newsgroups, instant messaging services, chat rooms, IP telephony), desktop teleconferencing, and groupware on the Internet and local area networks to communicate with teachers regarding assignments, tasks, and information-problems.
- B. Use e-mail, real-time communications (e.g., listservs, newsgroups, instant messaging services, chat rooms, IP telephony), desktop teleconferencing, and groupware on the Internet and local area networks to generate topics and problems and to facilitate cooperative activities among groups of students locally and globally.
- C. Use e-mail, real-time communications (e.g., listservs, newsgroups, instant messaging services, chat rooms, IP telephony) desktop teleconferencing, and groupware on the Internet and local area networks to generate topics and problems and to facilitate cooperative activities with subject area experts locally and globally
- D. Use computerized graphic organization, brainstorming or idea generating software to define or refine the information problem. This includes developing a research question or perspective on a topic.

2. Information Seeking Strategies:

Once the information problem has been formulated, the student must consider all possible information sources and develop a plan for searching. Students will be able to:

- A. Assess the value of various types of electronic resources for data gathering, including databases, CD-ROM resources, commercial and Internet online resources, electronic reference works, community and government information electronic resources.
- B. Assess the need for and value of primary resources including interviews, surveys, experiments, and documents that are accessible through electronic means.
- C. Identify and apply specific criteria for evaluating computerized electronic resources.
- D. Identify and apply specific criteria for constructing meaningful original data gathering tools such as online surveys, electronic interviews, or scientific data gathering tools such as probes, meters, and timers.
- E. Assess the value of e-mail, real-time communications (e.g., listservs, newsgroups, instant messaging services, chat rooms, IP telephony) desktop teleconferencing, and groupware on the Internet and local area networks as part of a search of the current literature or in relation to the information task.
- F. Use a computer to generate modifiable flow charts, time lines, organizational charts, project plans (such as Gantt charts), and calendars which will help the student plan and organize complex or group information problem-solving tasks.
- G. Use handheld devices such as personal digital assistants (PDAs or electronic slates) to track contacts, create to-do lists, and schedules.

3. Location and Access:

After students determine their priorities for information seeking, they must locate information from a variety of resources and access specific information found within individual resources. Students will be able to:

- A. Locate and use appropriate computer resources and technologies available within the school library media center, including those on the library media center's local area network, (e.g., online catalogs, periodical indexes, full-text sources, multimedia computer stations, CD-ROM stations, online terminals, scanners, digital cameras).
- B. Locate and use appropriate computer resources and technologies available throughout the school including those available through local area networks (e.g., full-text resources, CD-ROMs, productivity software, scanners, digital cameras).
- C. Locate and use appropriate computer resources and technologies available beyond the school through the Internet (e.g., newsgroups, listservs, WWW sites, ftp sites, online public access library catalogs, commercial databases and online services, and other community, academic, and government resources).
- D. Know the roles and computer expertise of the people working in the school library media center and elsewhere who might provide information or assistance.
- E. Use electronic reference materials (e.g., electronic encyclopedias, dictionaries, biographical reference sources, atlases, geographic databanks, thesauri, almanacs, fact books) available through local area networks, stand-alone workstations, commercial online vendors, or the Internet.
- F. Use the Internet or commercial computer networks to contact experts and help and referral services.
- G. Conduct self initiated electronic surveys conducted through e-mail, listservs, newsgroups and online data collection tools.
- H. Use organizational systems and tools specific to electronic information sources that assist in finding specific and general information (e.g., indexes, tables of contents, user's instructions and manuals, legends, boldface and italics, graphic clues and icons, cross-references, Boolean logic strategies, time lines, hypertext links, knowledge trees, URLs etc.) including the use of:
 1. search tools and commands for stand-alone, CD-ROM, and online databases and;

2. search tools and commands for searching the Internet such as search engines, meta search tools, bots, directories, jump pages, and specialized resources such as those that search the Invisible Web.
3. specialized sites and search tools commands that limit searches by date, location, format, collection of evaluated sites or other criteria.

4. Use of Information:

After finding potentially useful resources, students must engage (read, view, listen) the information to determine its relevance and then extract the relevant information. Students will be able to:

- A. Connect and operate the computer technology needed to access information, and read the guides and manuals associated with such tasks.
- B. Know and be able to use the software and hardware needed to view, download, decompress and open documents, files, and programs from Internet sites and archives.
- C. Cut and paste information from an electronic source into a personal document complete with proper citation.
- D. Take notes and outline with a word processor, database, or similar productivity program.
- E. Record electronic sources of information and locations of those sources to properly cite and credit in footnotes, endnotes, and bibliographies.
- F. Use electronic spreadsheets, databases, and statistical software to process and analyze statistical data.
- G. Analyze and filter electronic information in relation to the task, rejecting non-relevant information.
- H. Save and backup data gathered to secure locations (floppy disk, personal hard drive space, RW-CD, online storage, flash memory, etc.)

5. Synthesis:

Students must organize and communicate the results of the information problem-solving effort. Students will be able to:

- A. Classify and group information using a word processor, database or spreadsheet.
- B. Use word processing and desktop publishing software to create printed documents, applying keyboard skills equivalent to at least twice the rate of handwriting speed.
- C. Create and use computer-generated graphics and art in various print and electronic presentations.
- D. Use electronic spreadsheet software to create original spreadsheets.
- E. Generate charts, tables and graphs using electronic spreadsheets and other graphing programs.
- F. Use database software to create original databases.
- G. Use presentation software to create electronic slide shows and to generate overhead transparencies and slides.
- H. Create and use projection devices to show hypermedia and multimedia productions with digital video, audio and links to HTML documents or other programs. Convert presentations for display as web pages.
- I. Create web pages and sites using hypertext markup language (HTML) in a text document or webpage creation tools and know the procedure for having these pages loaded to a web server.
- J. Use e-mail, ftp, groupware, and other telecommunications capabilities to publish the results of the information problem-solving activity.
- K. Use specialized computer applications as appropriate for specific tasks, e.g., music composition software, computer assisted drawing and drafting programs, mathematics modeling software, scientific measurement instruments, etc.
- L. Properly cite and credit electronic sources, including text, graphics, sound and video, of information within the product as well as in footnotes, endnotes, and bibliographies.

6. Evaluation:

Evaluation focuses on how well the final product meets the original task (effectiveness) and the process of how well students carried out the information problem-solving process (efficiency). Students may evaluate their own work and process or be evaluated by others (i.e. classmates, teachers, library media staff, parents). Students will be able to:

- A. Evaluate electronic presentations in terms of both the content and format and design self-assessment tools to help them evaluate their own work for both content and format.
- B. Use spell and grammar checking capabilities of word processing and other software to edit and revise their work.
- C. Apply legal principles and ethical conduct related to information technology related to copyright and plagiarism.
- D. Understand and abide by telecomputing etiquette when using e-mail, newsgroups, listservs and other Internet functions.
- E. Understand and abide by acceptable use policies and other school rules in relation to use of the Internet and other electronic technologies.
- F. Use e-mail, real-time communications (e.g., listservs, newsgroups, instant messaging services, chat rooms, IP telephony) desktop teleconferencing, and groupware on the Internet and local area networks to communicate with teachers and others regarding their performance on assignments, tasks, and information-problems.
- G. Thoughtfully reflect on the use of electronic resources and tools throughout the process.

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